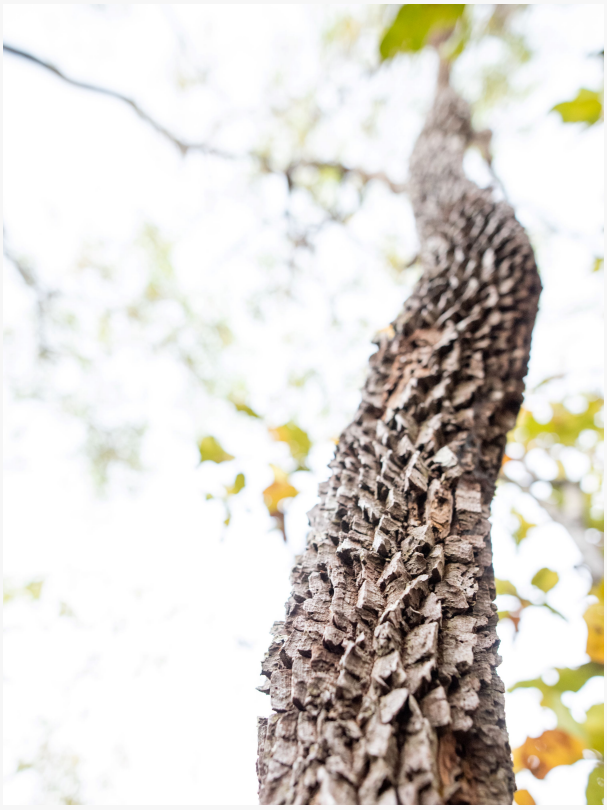
Trees reveal a climate surprise—their bark removes methane from the atmosphere

Revolutionary Findings on Trees as a Significant Sink for Atmospheric Methane

FLAGSTAFF, ARIZONA, US, July 24, 2024 /EINPresswire.com/ -- Microbes that live in tree bark are sucking greenhouse gases from the atmosphere, making trees an even more critical part of combating climate change than scientists previously thought, according to a study published today in Nature.



New Northern Arizona University research finds tree barks remove methane from the atmosphere

Northern Arizona University

At a time when research is finding climate change is increasing faster than expected, this new study offers some good news for global policymakers, provided they are willing to take the necessary steps to increase tree health and reduce deforestation.

“This research describes a new discovery of a process whereby trees cool the planet, completely apart from taking up carbon dioxide through photosynthesis,” said Alexander Shenkin, director of the Ecosystem Science and Innovation Lab at Northern Arizona University and an assistant research professor in the School of Informatics, Computing, and Cyber Systems. “By combining our measurements with a new global analysis of how much tree bark exists in the world, using 3D models of trees and satellite imagery, we show that the scale of this process is massive and is a significant contributor to keeping the world cool.”

Scientists have long known that trees remove carbon dioxide from the atmosphere. This new research, led by the University of Birmingham and including NAU as the only American partner,

found that microbes living in bark or in the wood itself are removing atmospheric methane on a scale equal to or above that of soil, making trees 10% more beneficial for climate overall than previously thought. Methane is responsible for about 30% of global warming since pre-industrial times, and emissions are currently rising faster than at any point since records began in the 1980s.

Although most methane is removed by processes in the atmosphere, soils are full of bacteria that absorb the gas and break it down for use as energy. Soil had been thought of as the only terrestrial sink for methane, but this research shows that trees may be equally as important as, or even more important than, soil in this cleaning process.

“These results show a remarkable new way in which trees provide a vital climate service,” said Professor Vincent Gauci of the University of Birmingham and lead researcher on the study. “The Global Methane Pledge, launched in 2021 at the COP26 climate change summit, aims to cut methane emissions by 30% by the end of the decade. These results suggest that planting more trees and reducing deforestation will be an important global approach to this goal.”

How the research works

The researchers took measurements spanning tropical forests in the Amazon and Panama; temperate broadleaf trees in Wytham Woods, in Oxfordshire, United Kingdom; and boreal coniferous forest in Sweden, hitting three major global forest ecosystems. In addition, the team used laser scanning methods to quantify the overall global forest tree bark surface area, with preliminary calculations indicating that the total global contribution of trees is between 24.6-49.9 million tons of methane. This fills a big gap in understanding the global sources and sinks of methane.

The researchers found methane absorption was strongest in the tropical forests, likely because microbes thrive in the warm, wet conditions found there. On average, the newly discovered methane absorption adds about 10% to the climate benefit that temperate and tropical trees provide.

“We suspect that natural ecosystems are more valuable to society than we give them credit for, and this study shows an important, previously invisible process that bears this out,” Shenkin said. “It turns out that the intricate 3D structural complexity of forests enables them to efficiently scrub methane from the atmosphere. What else will we find out that natural ecosystem complexity enables?”

For the next phase of this research, Shenkin has launched a venture, SelvaFlux Inc. (https://go.selvaflux.com/website) that aims to leverage this finding to increase tropical reforestation and conservation by making it more profitable in the carbon markets.

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